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AMERICAN POTATO JOURNAL

PUBLISHED BY

THE POTATO ASSOCIATION OF AMERICA

EAST LANSING, MICHIGAN

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A Promising Blight Resistant Potato

REINER BONDE, Maine Agricultural Experiment Station, Orono, Maine

In the course of a recent potato survey conducted in Aroostook County, our attention was directed to a variety which was apparently resistant to late blight **Phytophthora infestans** (Mont.) (de Bary). This variety is locally known by the name "Foster's Rust Proof."

According to Mr. F. W. Foster of Fort Fairfield, Maine, this variety was produced by James K. Paisley, of Albert, New Brunswick, Canada. It is claimed to be a seedling possibly from composite crosses involving the varieties Irish Cobbler, Green Mountain, Carman and Beauty of Hebron. Mr. Paisley apparently called it "Forty Fold."

Resistance of Foliage

In 1930 it was noted that fields planted to "Rust Proof" were very green and practically free from blight, while Green Mountain fields in the immediate vicinity had been completely killed by the late blight disease. These field observations indicated clearly that this variety was distinctly resistant to late blight under extremely severe field conditions.

In 1931 the Rust Proof variety was included in a series of comparisons with the commonly grown Green Mountain variety. Foster's Rust Proof variety was bordered on both sides by Green Mountains and neither variety was sprayed for disease control throughout the season.

Blight was first seen in the unsprayed Green Mountains on July 28. By August 14 infection was general and every Green Mountain plant was more or less infected. On August 25 the

Green Mountains were 50 to 75 per cent dead, and on September 10 all of the plants of this variety were completely dead.

The Rust Proof variety was not immune and a trace of infection was noted on most of the plants. In no case, however, was there more than 10 per cent of the foliage destroyed. For all practical purposes the amount of loss due to late blight in this variety was negligible.

It appeared that the fungus grew in the infected leaves as rapidly and even more so than in the Green Mountains provided infection actually took place. However, it appeared that the Rust Proof variety in some way escaped the disease.

Badly diseased plants were observed growing in the same rows as the new variety. These plants were examined and found to be an admixture of a very similar appearing variety that apparently is extremely susceptible.

Detached leaves of the Green Mountain and the Rust Proof varieties were sprayed with ***Phytophthora infestans*** conidia in moist chambers. In these tests all of the leaves became severely infected, and it was not possible to determine a significant difference in susceptibility.

During the extremely favorable blight weather of August, plants of the two varieties were heavily sprayed in the open field with late blight conidia. Plants of the two varieties in adjoining rows were selected for these inoculations, and were treated as nearly alike as possible. In some cases the foliage of the two varieties was intertwined before being inoculated. The difference in susceptibility was very striking. The inoculated Green Mountains had from 40 to 70 late blight infected spots and the seedling variety only 3 or 4 spots per plant. These tests indicated clearly that the Rust Proof variety possessed considerable resistance under these very severe conditions.

Resistance to Tuber Decay

Green and apparently uninjured tubers of the two varieties were sprayed with late blight conidia. All of the twelve Green Mountain tubers became badly infected and decayed completely. Only two of twelve inoculated Rust Proof tubers developed any infection and this was slight. Upon close examination it was apparent that the organism in these cases had entered through small skin abrasions. This experiment was repeated later with similar results.

Inoculations of freshly cut surfaces of the two varieties were also made. Thirty tubers of each variety were cut in two

with a sharp knife and after their cut surfaces had been sprayed with a suspension of late blight spores, the tubers were placed in cool moist chambers. All thirty inoculated Green Mountain tubers became infected by the late blight fungus and by bacteria and decayed completely. Only one tuber of the Rust Proof developed a soft decay. The other tubers of the seedling variety remained healthy or became only slightly infected. The infection was shallow and limited to the edges of the cut surface near the periderm. There was also a great differences in the amount of mycelial growth on the cut surfaces of the two varieties. Production of conidia was profuse on the Green Mountain and sparse on Rust Proof.

Mr. Foster maintains that the seedling "will not rot." Our observations show that it at least is quite resistant to field decay. The amount of field rot for the Green Mountain variety varied in our tests from a trace on the higher ground to 35 per cent on the lower and more poorly drained soils. In Table 1 it is noted that the Rust Proof variety yielded 90 bushels more per acre on the poorly drained soil than did the Green Mountains. Here most or all of the increase in yield of the Rust Proof variety may be attributed to its greater resistance to field rot. In our tests we were unable to find a tuber of the Rust Proof variety that had undergone decay in the field even in the low places where tubers of the Green Mountains decayed badly.

Yield Comparisons

The comparative yields are given in Table 1. It may be noted that the average yield when all plots were considered was greater for the Rust Proof variety. The difference of twenty-two bushels per acre is hardly significant for these data (Odds 17.73). On the high, well-drained soil the yield was approximately the same (only seven bushels greater for the Rust Proof variety) in spite of the fact that the Rust Proof continued to grow three weeks longer than did the Green Mountains. The real significant yield differences occurred in the low soil where the Green Mountain tubers rotted badly. The writer has seen cases in low soil where nearly 50 per cent of the tubers of the Green Mountain variety developed rot in the field. It would seem that under such conditions this seedling might prove of value.

On Highmoor Farm, in southern Maine, Doctor Donald Folsom, pathologist of the Maine Experimental Station, found that this variety was somewhat more resistant to early blight than Green Mountains and remained green several days longer.

The Rust Proof, however, yielded 20 per cent less than the Green Mountain.

TABLE 1. Yield Comparisons of Green Mountain and Rust Proof Varieties[1]

Plot Series	Yields of Sound Tubers in Bushels Per Acre		
	Proof	Mountain	Difference in favor of Rust Proof
Plots on high, well-drained soil	355	348	7
Plots on low soil	342	252	90
All plots combined	354	332	22

[1]Based on 12 pairs of 50-foot row plots, each pair consisting of the two varieties adjacent to each other.

Other Characteristics

Regarding the cooking qualities, Mrs. Sweetman, professor of home economics, University of Maine, states that in cooking tests there was no particular difference in the results obtained, between the Rust Proof strain and the Green Mountains when grown under similar conditions.

The variety is extremely late, has purple blossoms, and produces white tubers that are very similar in shape to those of Green Mountains. It has shallow eyes, and a tough, firm skin which is an added desirable character, especially in stony or heavy soil. Rust Proof also appears to keep well in commercial storage.

Value of a Satisfactory Blight-Resistant Variety

The control of late blight constitutes one of the major problems in the production of potatoes in the New England States and New York.

According to Gratz (1) the average annual loss in yield in the United States from late blight is 3.58 per cent, while the annual reduction in yield in Maine for this disease is 10.9 per cent. (Data given by Gratz are from Plant Disease Reporter, Bureau of Plant Industry, 1918-1927.)

The actual loss from this disease is very hard to estimate. The writer and Mr. Beverly, County Agent of Aroostook County, made surveys in 1930 and 1931 to determine the extent of losses effected by farmers, during seasons of serious late blight epidemics. The surveys were made the latter part of August at a time when all fields of the Green Mountain variety should have been green and still producing potatoes if they had been properly sprayed. The information obtained from these inspection tours is summarized in Table 2.

TABLE 2. Summary of Aroostook County Fields Included in Surveys of 1930 and 1931

Year	Number observed	Number dead	Percentage dead
1930	671	436	65
1931	940	322	34

On Aroostook Farm (experimental) badly blighted, unsprayed plots yielded about 100 bushels less per acre in 1930 and 1931 (from 18 to 25 per cent loss) than did the well sprayed plots. Weekly yield tests made in 1931 showed that plots killed by the disease the latter part of August yielded approximately 86 bushels or 20 per cent less per acre than they would have if allowed to mature. Another series of plots which were allowed to die early by neglecting the late spray applications yielded 21 per cent less than adjacent plots which received proper spray treatments and remained green and free from disease. Judging from these observations and yield studies it seems safe to estimate the loss at about 20 per cent of the total yield of the blight-killed fields in 1930 and 1931. These figures of course do not represent the entire yield reduction.

In Aroostook County approximately 100,000 cars of potatoes are raised annually. With the proper use of fungicides commercial control of late blight is possible under most conditions. The practice of spraying or dusting is, however, tedious and expensive. A more practical solution is to produce by plant breeding methods new varieties of potatoes that are immune or resistant to disease and which also possess high yielding power and desirable marketing qualities.

Progress in Breeding Blight Proof Varieties

It appears that no great progress has been made in the production of potato varieties that are blight resistant and at the same time desirable for the market. Salaman (4, p. 119) in 1926 has summarized the situation in England thus: "In conclusion it must be admitted that of the varieties listed in this book none of them combine quality, cropping and blight resistance in any notable degree, so that were Great Britain to be visited by another such epidemic as that of 1845, 1846, or 1879, it would find the growing crops of today an all too easy prey."

Reddick (3) mentions four cultivated potato varieties and one wild species that are considered as possessing resistance to blight. He lists Ekishirazu, a Japanese variety, Steinthaler and Halbfruh from the Vosges, Evergreen or Jersey Redskin from America and ***Solanum demissum,*** a wild species supposedly from Mexico, as being resistant to ***Phytophthora infestans*** attack. Melhus (2) in 1916 reported an American variety called Red Peach as being highly resistant to leaf infection. Judging from these reports and from our experience with the Rust Proof of the present paper it is hoped that disease resistance can be introduced into new desirable commercial varieties.

CONCLUSION

It is realized that the amount of scientific information regarding the Rust Proof variety is limited. The available data are, however, thought to be of significance and of interest to potato growers and research workers.

This new variety because of its evident blight and tuber rot resistance has promise as foundation stock for further breeding studies in the production of new blight resistant varieties. The Rust Proof potato has smooth white tubers and a firm tough skin which are added desirable characters for breeding purposes.

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The Hastings District

C. L. FITCH, Iowa State College, Ames, Iowa

In Johns and Putnam counties tributary to Hastings and Palatka, Florida, is one of the most important and most favored early potato districts of the United States. Hastings is in the same county with St. Augustine, where was made in 1565, the first permanent white settlement within the present boundaries of the United States.

This region lies along the St. Johns river which offers water transportation for part of the crop to Jacksonville and then by boat to New York and Philadelphia.

The Spaulding Rose potato, called in the west King, is practically the sole potato of the Hastings-Palatka district. Although experiments have shown that Green Mountains or Cobblers would yield more, Spaulding Rose is well established as the trade-mark of new potatoes, and the consumers in the northeastern part of the United States have found these potatoes so good that a change of varieties is not considered practicable. It is one of the few places which uses a late or medium late potato for early sale.

There is a part of the district which lies in a bend of the broad warm St. Johns river. Here potatoes are planted about the first of December and from this bend potatoes are shipped in March and April. The bulk of the crop, however, is planted in January. Planting is on full blast by New Year's Day. Colored women receive 15 cents per 100 pound bag for cutting the seed. They were making the pieces large so that plants would have strength enough to come again if frost cut down the tops. They were doing a good job but in my judgment, modern cutter boxes would have enabled the management to pay these women more money per day while at the same time getting the seed potatoes cut for less money per sack. The photograph was taken on one of the farms of G. H. Stone and Son of Palatka and of Ft. Fairfield, Maine. Mr. Stone is the nearer of two men in the picture. While he plants a crop of potatoes at Palatka, his sons are closing out the previous year's crop in Aroostook County, 2,000 miles or more away. In the spring, they plant the crop in Aroostook while he is selling out the crop grown in the Hastings district. Mr. Stone then goes north to help with the work in Maine when the crop in Maine has been harvested, trainloads of their seed are put aboard cars and he goes with them to Florida for the

winter. I found one Wisconsin man who does double duty in the same way.

Everywhere in the Hastings district on New Year's Day, the seed potatoes were piled outdoors without fear of frost. Everywhere the darkies were cutting seed and the planters were busy in the field.

At not a few places, I noticed the use of blue tags on seed not certified; although this practice no doubt is legal, the purpose of the use of the blue tags in most cases is to satisfy the uninformed grower without going to the expense of providing them with the certified grade of seed. To the extent of which this is true, the practice of course is fraudulent.

Sitting with Mr. Stone is Mr. G. W. Waller, the leading receiver of seed potatoes and shipper of Spaulding Rose potatoes. Mr. Waller himself is a grower as well. He it was who cleared up a lot of the land close to Hastings, and he has been successful in his dealings in fertilizer and farm machinery. The Hastings Association is the largest shipper, and they have a very fine office.

The Hastings district has a sandy top soil and an impervious soil down three to five feet. It also has an abundance of

flowing wells so that sub-irrigation is practicable everywhere. The land is well equipped with ditches and to some extent with tile. It often is necessary to get rid of excess rain water, and for this purpose, all the land is bedded in single row beds before the potatoes are planted. This enables excess water to run off the beds and down the middles to the ditches, and out of the country.

The Hastings district has a fine name for quality. Potatoes are dug while the vines are still green or immediately after they have died, and this gives them bright color, which also is a trade-mark of the Hastings district.

Rain at digging time is one of their troubles and it seems likely that a large proportion of the crop will be washed in years to come before it is placed upon the market. The total shipments are upwards of 5,000 carloads per year.

I was very much interested in the perfect spacing of seed and the perfect placing of fertilizer by the New Iron Age planter in use by Mr. Waller and some of his customers. They place a board on the bias behind the covers and take off the ridge to a uniform one inch of the seed, to get quicker warmth and growth.

Potatoes---A Volume Factor in Chain Store Sales

W. C. SMITH, The Kroger Grocery & Baking Co., Cincinnati, Ohio

Most commodities of the food group have shown declining dollar sales trends during 1931. This of course is largely due to unit values. Some commodities have forged ahead in tonnage while others have shown a considerable decrease in both dollar sales and in tonnage.

In a recent statement, Mr. T. G. Lee, President of Armour & Company, shows how the declines in prices of meats and meat products have accounted for a reduction of $230,000,000 in Armour's sales for the year 1931. Pork and pork products including lard have declined from 28 to 50%; butter—one of Armour's big produce items, has declined 19%; even beef, lamb, and veal show a decline of approximately 20%; all fruits and vegetables show a marked decline.

One of the principal items of the vegetable group showing a large decrease in dollar sales is potatoes. Competition has become so keen today that items are now classified in competition with potatoes that would not have been so considered a few years ago. It is interesting to note that the fruit and vegetable items showing an increase are those which have enjoyed national advertising and considerable push and sales effort on the part of both growers and shippers while the ones showing a decrease have received practically no publicity other than that given by the retail dealers.

In our own operations, potatoes represent a considerable factor in tonnage. For example, during 1930, Kroger sold approximately 6,500 carloads, or 160 trainloads of potatoes.

Prior to the great decrease in unit price potatoes ranked as the leading produce item in dollar sales for the Kroger Company until sometime about the middle of 1931 when the lower prices placed them in second place in the produce list. Potatoes are handled on a very narrow margin of profit, and are given more sales promotion than almost any other produce item, and probably equally as much as almost any single item in the grocery department of this business. The large volume handled enables Kroger to distribute potatoes economically at a minimum cost working on a very small margin, as a large part of our volume is moved in comparatively sizeable retail units, such as bushels and 100-pound sacks.

Our country stores located many miles from our warehouses may receive their supplies in carlots or by truck delivered direct to the village in which the store is situated. Frequently cars are sent to a small town for one or two stores and this gives us a low cost of distribution, thus enabling our stores to sell on a very close margin over actual cost delivered. Experience has taught us that successful sales on potatoes can only be built up with quality merchandise, and of necessity quality must be originated with the grower, as chain stores do not have facilities for grading potatoes. Stricter grading is necessary if we are to satisfy the consumer which is, of course, your ultimate consumer. By stricter grading we can obtain an increase in the sale of potatoes.

Kroger now handles only U. S. No. 1 grade, which on some shipments is too poor. If the shipper would eliminate poor quality now being sold as U. S. No. 1 grade, it would be far more profitable to potato growers as a group in the long run.

The chain stores are set up for mass distribution and they do offer to shippers unlimited channels for distributing surplus supplies. They are so organized that a national sale can be

planned and put into effect on short notice, so moving large quantities of merchandise whenever a surplus occurs. Without such a channel a shipper would be in a difficult position in trying to move large surpluses through any other channel as the jobbing trade does not have control over retail units, nor can they plan sales and advertise direct to the consumer.

One of the factors that may have an important bearing on potato sales during the past year is the fact that they are getting strong competition from other staple foods, which are likewise low in price. There was a large crop of sweet potatoes selling at low prices. More important than this has been the low price of cereal foods. Flour prices are the lowest in many years, and along with low priced flour are cheap macaroni, spaghetti, breakfast foods, rice and beans—all of these items are keen competitors of potatoes. Macaroni is receiving today more national advertising than it has ever received before. In this connection it is interesting to note that a recent check of food advertising in Good Housekeeping, Ladies' Home Journal, Woman's Home Companion, Pictorial Review, and Delineator, shows that a small percentage of all foods sold were receiving 77% of the food advertising in the January issue of these leading women's magazines. Five classes of food products—cereal preparations, canned fruits and vegetables, macaroni, cooking fats and miscellaneous package specialties carry the 77% of the food advertising mentioned above. It is estimated that all of these combined cover only about 5% of the total food bill of the United States, yet in these leading magazines they receive 77% of the food advertising.

Fruit and vegetable growers and shippers as a whole have enjoyed a tremendous increase in business during the last ten years, but they are doing nothing towards increasing that business or maintaing it, and with a few notable exceptions they are leaving it largely to the retail dealer to do their sales promotion work for them.

More than one million carloads of fresh fruits and vegetables are rolling to consumers' markets in this country annually with very little concerted effort to increase the consumer demand or acceptance. Has all of this development taken place without advertising and without co-ordinated sales promotion? By no means! It did not just happen. Chain stores and other food dealers in the United States have taken up the task that most producers shirked and have aggressively made the consumer "fruit and vegetable conscious." Chain stores, voluntary groups and independents have not only given fruit and vegetable products attractive display in their stores, but are regularly advertising them to the consumer through the daily

newspapers. This merchandising and advertising by retailers is far from what it should be, but it is remarkable that it has been accomplished without a co-ordinated national program and without the material support of the chief beneficiaries—growers and shippers.

In checking fresh fruit and vegetables advertising in some leading magazines for January and March of 1931, it was discovered that only 3½ pages out of a total of 267 pages devoted to food were used for fresh fruits and vegetables. The price margin paid producers is just as wide on these lines as on any other food line, and wider than on many of our nationally advertised products. Money is being spent for marketing, but marketing channels are not being cleared by effective advertising and trade promotion.

It has long been an opinion that potatoes could not be effectively advertised because they are unstandardized and because growers and growing districts are widely scattered. There are a number of exceptions in good merchandizing of fruits and vegetables which prove this is not correct. Shippers and citrus growers have mastered standardization, reconciled prejudice, and have shown what aggressive advertising and co-ordinated trade promotion will do for the citrus fruit business. Cranberry growers have shown it can be done—so have banana companies.

But the retail dealers are still doing the job of advertising and trade promotion on potatoes. An analysis of our own advertising for 1931 shows that we ran approximately 40 special sales on potatoes; that we used 6,820 column inches in a total of 551 newspapers. We did this for 5,000 stores. In addition to this newspaper advertising on price we are continually displaying potatoes in our windows and in our fruit and vegetable racks in our stores. We have also developed some attractive window posters which you can see "say something" about potatoes. These are placed in all of our stores at various times when we are running special potato sales.

Considerable propaganda has been spread during the past year to the effect that chain stores are planning on growing their own potatoes. This, in our opinion, is absurd and we doubt if it will ever be done successfully. Chain store operators are manufacturers and merchants—they are not farmers, although a good many of us who are now in the chain store business have owned and operated farms.

Kroger at present purchases all of their fruits and vegetables from large shipping organizations and cooperative asso-

ciations. Their supplies come from all shipping and growing centers of the United States, and they do not attempt to deal directly with individual farmers. It is obvious that a large chain store must have their products carefully graded and that large shipping organizations and cooperative associations are better equipped to deal with the farmer than could a chain store.

May I impress upon you, please, the importance of a greater effort towards more uniform grading and standardization of type and quality? The past year has not been an easy one in which to maintain sales volume from the standpoint of dollars, but from the standpoint of tonnage we are happy to say that good gains have been made.

Crop and Market News

POTATO PRICES ADVANCE

(Contribution from Bureau of Agricultural Economics)

The cold wave of early March did considerable damage to plantings of early potatoes in the South, restricted the haulings and shipment of old potatoes, and advanced the price of all stock nearly everywhere. From a total movement of 6,200 cars during the opening week of March, shipments for the next seven days (March 6-12) dropped to 3,750 cars, of which 150 were new stock from Florida. Movement during the same period last year was 5,220 cars. Forwardings from Maine were fairly well maintained in volume, but output of nearly all other States was greatly reduced during the second week of March.

F. o. b. prices advanced considerably, and the market at important shipping points was in a much more favorable position than it had been for many months. Shippers of sacked Round Whites in western New York were getting 70c-73c per 100 pounds by the middle of March, while Green Mountains returned 60c-65c in northern Maine. At loading stations in the North Central area, a range of 65c-75c prevailed. Western Nebraska reported Bliss Triumphs returning 65c-70c. Cash sales in southern Colorado at the end of the season there were being made at 35c-55c per 100 pounds, while northern Colorado quoted

prices on a usual-terms basis at 45c-65c. Best Russet Burbanks in southern Idaho were bringing 55c-70c cash per 100 pounds, but the f. o. b. market in Yakima Valley of Washington was weak at $10-$11 per ton.

By March 15, the Chicago carlot market had strengthened to a range of 90c-$1 per 100 pounds of northern Round Whites, with Idaho Russet Burbanks at $1.45-$1.55 and Nebraska Triumphs at $1.30-$1.35. "Futures" for late-March delivery showed an asking price of $1.40 per 100 pounds of Idaho Russets, with Round Whites at 88c and Maine Green Mountains at 85c, which was slightly lower than the spot market.

Eastern jobbing centers reported a range of 80c-$1.35 per 100 pounds of Maine Green Mountains. New York Round Whites brought 85c-$1.20, and arrivals of Green Mountains from Canada ranged $1.35-$1.50 per 90-pound sack. New Spaulding Rose potatoes from Florida were jobbing at $4.50-$6 in terminal markets, with a few f. o.b. sales around $4 per barrel in the Hastings district. Bushel crates brought $1.40-$1.75 in consuming centers. The bushel crates of Florida Bliss Triumphs sold generally at $1.35-$2.25, and bushel hampers from southern Texas at $1-$1.25.

The freezing weather in southern producing sections cut back the early crop to the ground and was expected to reduce the total output and to delay the carlot movement. Some damage occurred to the crop produced in northern Florida and southern Texas.

Potatoes Held on Farms

The report of farm stocks of potatoes on March 1 showed a total of about 112,000,000 bushels or 33% of the 1931 crop still on hand. This compares with 82,000,000 bushels on farms on March 1, 1931, from the smaller crop of 1930. These supplies include the quantities held for seed and for food on the farms, as well as the volume which will still be lost by shrinkage or waste. The 18 surplus-producing late-potato States reported 96,000,000 bushels on farms March 1, compared with 70,000,000 a year ago. Twelve other late States had nearly 11,000,000 bushels on the farms, or almost 3,000,000 more than at the same time in 1931. The seven intermediate States showed holdings of about 5,000,000 bushels, or somewhat more than a million in excess of stocks of a year ago. Some of the western producing States had lighter supplies on hand than last spring, but most of the other States showed heavier holdings. Although carlot shipments have been lagging behind the records of last season, it is evi-

dent that local sales and movements by truck have been greater than for the 1930-31 season.

Of the 335,630,000 bushels of potatoes grown last year in 37 late and intermediate States, about 7% was unfit for food or seed. In addition, growers reported that 2,300,000 bushels of sound, marketable potatoes were fed to livestock up to January 1, with indications that more would be so utilized at prevailing market prices. No later report has been secured regarding feeding of potatoes. Farms producing potatoes are reported to have held 55,000,000 bushels of their 1931 crop for food on the farm, compared with 53,000,000 bushels the previous season and 56,000,000 in 1929-30. Quantities held on farms for use as seed in the localities where grown were estimated at nearly 32,200,000 bushels on January 1, 1932, compared with about 32,400,000 bushels in 1931 and 29,700,000 bushels in 1930.

Notes

LOUISIANA

Following the destructive freeze of March 9th it was estimated that the average yield of the Louisiana crop of potatoes would be reduced by 10%. Dry, cold weather conditions following the freeze have caused a very slow recovery on the part of potatoes that were above the ground, and in many instances the seed rotted before the new growth was started. The damage to the crop now appears to be more than was estimated at the time of the freeze, and the entire crop will undoubtedly be delayed by at least two weeks. Scarcity of money at the time of planting curtailed the liberal use of fertilizer which will further decrease the crop.

The Louisiana Potato Tour is scheduled for the week of April 19th, beginning in Terrebonne Parish on the 19th, Lafourche on the 20th, and on the 21st a stop over at Baton Rouge to visit the Experiment Station in the morning and then to Pointe Coupee Parish in the afternoon of the same day.

J. W. Weston.

MAINE

Orono, Maine, April, 1932—Having contract signatures for 5649 acres of potatoes, five local units of the Maine Potato Grow-

ers Incorporated voted at Presque Isle to organize a cooperative organization.

For several months organization committees in the various units have been busy in presenting the plan to potato growers. April 1 was the date set when the committees would decide whether or not they had sufficient volume to start their unit. Local organizations will file their incorporation papers during the week beginning April 11. When this is done the locals will combine and incorporate a central selling agency to be known as the Maine Potato Growers Incorporated.

The units which voted to organize at the meeting were the Caribou Potato Growers Association; the Fort Fairfield Potato Growers Association; the Presque Isle Potato Growers Association; the Monticello Potato Growers Association; and the Sherman Potato Growers Association.

Edgar Russ, E. H. Doyle, F. F. Smiley, Jerry Smith, and W. R. Thompson represented the Caribou Association. Fort Fairfield was represented by D. W. Haines, George Findlen, T. E. Houghton, and Joseph Emery. The Presque Isle committee consisted of M. E. Smith, H. H. Higgins, F. W. Hussey, W. L. Berce, and George Brown. L. C. Good, Elbridge Wellington, James Good, Merle Lowery, and J. M. Foster represented the Monticello committee. The Sherman committee was represented by Fred Rush, Joseph Rush, Colby Estabrooks, Fred Corliss and Maurice Robinson.

Donald Folsom.

ILLINOIS

It may be interesting to the readers of our magazine to know that we are shipping a small seed order to South Africa, consisting of Green Mountains, Rural New Yorkers, Russet Rurals, Burbanks, Cobblers, Triumphs, Early Ohios, Early Rose and Spaulding Rose.

The shipment is going to Pretoria, Africa, where they will be used by the Agricultural Department for experimental purposes.

This is the second shipment we have made to South Africa. Of course the Russet Rurals will be out of Michigan, the Cob-

blers and Ohios out of North Dakota, the Burbanks out of Minnesota and the other varieties out of Wisconsin.

Albert Miller & Co.

THE POTATO WORLD

This is the name of a new monthly outlook bulletin prepared for members of the National Potato Institute. It is devoted to the best interests of the potato industry of the United States, and gives advanced information on acreage, size of crop, market conditions, etc. It should be of interest to both growers and dealers.

The Potato World is published by H. B. Tabb, 9 South Kedzie Av., Chicago, Illinois. Potato men and all affiliated business interests from all parts of the United States and Canada are invited to become active members of the National Potato Institute.

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POTATO PLANTERS

Potato planting time is here again—also catalogues of potato planting machinery. The most recent catalogue received was that of A. B. Farquhar Co., York, Pennsylvania, manufacturers of "Iron Age" machinery. Automatic and assisted feed planters in one-row, two-row and three-row models are finely illustrated. New types of fertilizer distributors for handling high or low analysis fertilizers are described in detail, also the new equipment for accurate spacing of seed pieces and for shallow or ridge methods of covering. This catalogue marks the most recent improvements made in potato planter design and should be of interest to all potato growers.

Review of Recent Literature

Folsom, Donald, F. V. Owen and **Hugh B. Smith.** Comparisons of Apparently Healthy Strains and Tuber Lines of Potatoes. Maine Experiment Station Bul. 358. July 1931.

A very comprehensive and interesting report of experiments conducted in Aroostook County, comparing various apparently healthy commercial strains and tuber-lines of potatoes.

The tests were conducted in the five seasons 1922-1926, with seven Green Mountain strains from New York, Vermont, New Brunswick and Prince Edward Island, all apparently free from disease. In 1927 the tests included five Green Mountain strains and a substrain, from Vermont, New Hampshire, Maine and New Brunswick, all but one of which were introduced in the current year. Further comparisons were also made of different commercial strains of the Irish Cobbler, Spaulding Rose and Bliss Triumph varieties, after the removal of plants with recognizable diseases.

The tuber lines used in the experiment were selected in 1923 from a commercial strain of the Green Mountain variety.

The general conclusions of the authors are as follows:

"(a) Commercial strains of the same variety may perhaps differ in the same set of conditions, due to inherent differences in nature, with respect to yielding power, tuber weight, and tuber shape. However, if they do this, the fact is very difficult to demonstrate convincingly because of the comparatively great effects of various environmental conditions upon the character-

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istics mentioned. Further, such differences as may be due to strain are too small to be worth spending much time and effort upon them, especially in comparison with differences due to various other conditions. (b) The preceding applies also to tuber-line or hill-line selections. (c) Conclusions from strain comparisons are most reliable if applied to the relative values of strains when freshly introduced, unless it is certain that there are no diseases which will spread from one strain to another during the comparison continued for several years. (d) Practical strain comparisons and tuber-line development require certain careful methods."

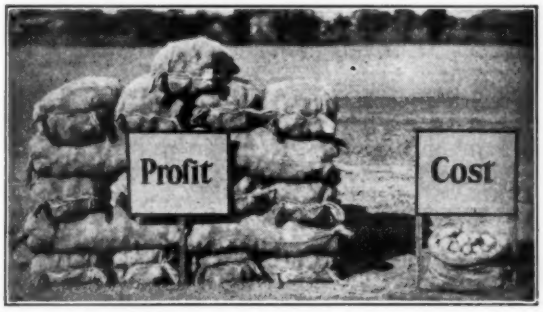
W. F. Russow.

Wessels, P. H. Soil-acidity Studies with Potatoes, Cauliflower, and other Vegetables on Long Island. Cornell Univ. Agr. Exp, Sta. Bul. 536, January 1932.

The author used lime, sulphuric acid, and sulphur to vary soil reaction sufficiently to afford a pH range of about 4.3 to 7.0 in a study of the effects of this factor on growth and yield of potatoes, cauliflower, peas, beans, onions, lettuce, spinach, beets and carrots. His experiments were done during the years 1926-1929 and involve 130 plots arranged in two series. The soil is naturally about pH 5.0 and classed as Sassafras loam. The work was designed to help the Long Island grower with some of the problems involved in growing both potatoes and cauliflower in the same cropping system. A fairly complete review of literature covering the work done on the relation of soil reaction to (1) plant distribution, (2) plant growth, (3) toxic substances absorbed by the plant, (4) plant nutrition, (5) the incidence of certain diseases and (6) the optimum yield of specific crops is given.

Results with potatoes show that soil reaction should be maintained between pH 4.8 and 5.4 if this crop is to be grown on the same soil year after year. Maximum yields were obtained at pH 5.0 to 5.6. Scab did not become a serious factor usually until the pH value reached or exceeded 5.6 but this point varied with the season.

E. V. Hardenburg.



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Whittemore, Margaret and **Kuschke, Blanche M.** Certain Relationships of Potash Fertilization and Varieties of Potatoes to Table Value. Rhode Island Exp. Sta. Bul. 231, August, 1931.

The authors used Irish Cobbler, Green Mountain and Russet Rural varieties of potatoes in cooking tests as material for these studies. The potatoes were boiled, mashed, baked and made into Saratoga chips. Large amounts of potash in the fertilizer used in growing the tubers resulted in more mealiness of the cooked product than where less potash was used. Potash did not affect the quality of Saratoga chips. Muriate of potash was more effective in producing mealiness than sulphate of potash. No relation between percentage of starch in the potato and mealiness was found. Also no significant difference in quality between the three varieties was found where all were grown under the same conditions.

—E. V. HARDENBURG.

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